

PCT US01 04082

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
9 August 2001 (09.08.2001)(10) International Publication Number  
WO 01/57460 A1(51) International Patent Classification<sup>7</sup>: F28C 1/00, F02M 23/14

(74) Agent: SMITH, J., Mark; Pittenger &amp; Smith, P.C., 3010 East 6th Avenue, Denver, CO 80206 (US).

(21) International Application Number: PCT/US01/04082

(81) Designated States (national): AE, AG, AL, AM, AT, AU,

(22) International Filing Date: 7 February 2001 (07.02.2001)

AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/180,819 7 February 2000 (07.02.2000) US  
60/265,548 31 January 2001 (31.01.2001) US

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(71) Applicants and

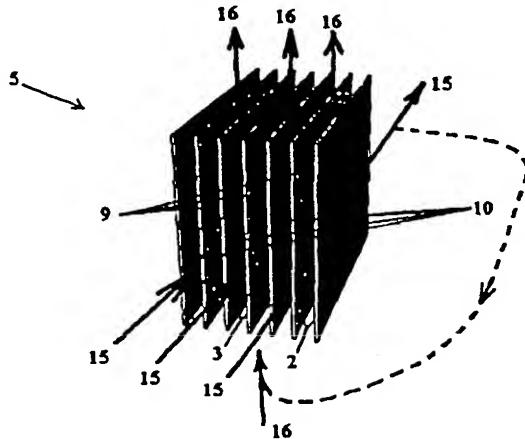
(72) Inventors: MAISOTSENKO, Valeriy [US/US]; 5628 South Idalia Street, Aurora, CO 80015 (US). GILLAN, Leland, E. [US/US]; 3124 West 62nd Avenue, Denver, CO 80221 (US). HEATON, Timothy, L. [US/US]; 10875 West 77th Avenue, Arvada, CO 80005 (US). GILLAN, Alan, D. [US/US]; 3556 West 62nd Avenue, Denver, CO 80221 (US).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: INDIRECT EVAPORATIVE COOLING MECHANISM



(57) Abstract: The present invention relates to methods for indirect evaporative air cooling with the use of plates, heat exchangers and feeder wicks on the indirect evaporative type. Several components for an indirect evaporative heat exchanger described as follows: a plate for an indirect evaporative heat exchanger where the plate is made of laminate material comprising one sheet of wicking material (2) for wet zone(s) and the other of a water proof plastic material (3) for the dry zone(s). An evaporative heat exchanger is created by assembling the plates forming spacing for wet channels (9), (they are created by the wet zone of the plates,) and dry channels (10), (they are created by the dry zone of the plates,) with channel guides or corrugated plates. The spacing between the plates is defined to reduce pressure drop for increased airflow. A feeder wick system creates the wetting of the wet channels without excess water. Sometimes the wet zone of the plate can be made of a membrane material where the opposite side of this membrane material is covered by a solid desiccant creating the wet zone of this desiccant plate. An indirect evaporative heat exchanger that is created by assembling both wick coated with plastic plates and desiccant plates, can realize not only the evaporative cooling but also the dehumidification of air.

WO 01/57460 A1